

§ 1.111 Amendment
10/630,778 (60000500-1012)

Page 2

In the Claims:

1. (currently amended) A near-hermetic microwave semiconductor device comprising:

a substrate;

a Monolithic Microwave Integrated Circuit (MMIC) disposed on said substrate;

a sealant disposed on said MMIC; and

a Backside Interconnect ~~which connects~~ connecting said substrate to said sealant-coated MMIC, ~~includes including~~ including plated-through vias disposed ~~on in~~ in said MMIC extending between opposite faces of said MMIC, and ~~ties tying~~ to terminals on said substrate.

2. (original) The microwave semiconductor device according to claim 1, wherein said substrate is a PWB suitable for ultrahigh frequency applications.

3. (original) The microwave semiconductor device according to claim 2, wherein said ultrahigh frequency applications include Phased Array Antenna (PAA) systems.

4. (original) The microwave semiconductor device according to claim 2, wherein said substrate is formed of one of a liquid crystal polymer (LCP) and a ceramic.

5. (currently amended) A near-hermetic microwave semiconductor device comprising:

a substrate;

a Monolithic Microwave Integrated Circuit (MMIC) disposed on said substrate;

a sealant disposed on said MMIC comprising a layer of silicon carbide; and

a Backside Interconnect ~~which connects~~ connecting said substrate to said sealant-coated MMIC, ~~includes including~~ including plated-through vias disposed ~~on in~~ in said MMIC extending between opposite faces of said MMIC, and ~~ties tying~~ to terminals on said substrate.

6. (currently amended) A near-hermetic microwave semiconductor device comprising:

§ 1.111 Amendment
10/630,778 (60000500-1012)

Page 3

a substrate;
a Monolithic Microwave Integrated Circuit (MMIC) disposed on said substrate;
a sealant disposed on said MMIC; and
a Backside Interconnect extending between opposite faces of said MMIC and
connecting said substrate to said sealant-coated MMIC,
wherein said sealant is disposed over benzocyclobutene (BCB) as an interlayer
dielectric.

7. (original) The microwave semiconductor device according to claim 1, wherein
said MMIC is a GaAs MMIC.

8. (previously presented) The microwave semiconductor device according to
claim 5, wherein the device is substantially free of bond wires and solder balls.

9. (previously presented) The microwave semiconductor device according to
claim 1, further comprising a plurality of rest vias connecting the MMIC to a bottom
ground plane of the substrate.

10. (previously presented) The microwave semiconductor device according to
claim 1, further comprising a solder attachment along a periphery of said MMIC, to near-
hermetically seal said MMIC to said substrate.

11. (original) The microwave semiconductor device according to claim 10,
wherein the said solder attachment is formed using AuSn solder.

12. (original) The microwave semiconductor device according to claim 1, further
comprising a conformal coating disposed on said sealant.

13. (previously presented) The microwave semiconductor device according to
claim 12, further comprising a cover disposed over said conformal-coated MMIC in a
non-contacting manner.

§ 1.111 Amendment
10/630,778 (60000500-1012)

Page 4

14. (original) The microwave semiconductor device according to claim 1, further comprising a cover disposed on said MMIC.

15. (currently amended) A near-hermetic device comprising:

a substrate;

an electronics package disposed on said substrate;

a sealant disposed on said electronics package;

a Backside Interconnect ~~which connects~~ extending between opposite faces of the electronics package and connecting said substrate to said sealant-coated electronics package; and

an interlayer dielectric disposed between said sealant and said electronics package.

16. (original) The near-hermetic device according to claim 15, wherein said electronics package is solder-attached to seal said electronics package to said substrate.

17. (currently amended) A near-hermetic microwave semiconductor device, comprising:

a substrate;

a Monolithic Microwave Integrated Circuit (MMIC) disposed on said substrate;

a sealant disposed on said MMIC;

a Backside Interconnect ~~which connects~~ extending between opposite faces of said MMIC and connecting said substrate to said sealant-coated MMIC;

a conformal coating disposed on said sealant; and

a cover disposed on said device without directly contacting said coating.

18. (previously presented) The near-hermetic microwave semiconductor device according to claim 17, wherein the device is substantially free of solder balls and bond pads and said coating is a low dielectric having a dielectric constant suitable for operating at an operational frequency between about 2 GHz and about 10 GHz.

§ 1.111 Amendment
10/630,778 (60000500-1012)

Page 5

19-26. (canceled)

27. (previously presented) The microwave semiconductor device according to claim 6, wherein said substrate is a PWB suitable for ultrahigh frequency applications.

28. (previously presented) The microwave semiconductor device according to claim 27, wherein said ultrahigh frequency applications include Phased Array Antenna (PAA) systems.

29. (previously presented) The microwave semiconductor device according to claim 27, wherein said substrate is formed of one of a liquid crystal polymer (LCP) and a ceramic.

30. (previously presented) The microwave semiconductor device according to claim 6, wherein said sealant comprises a layer of silicon carbide.

31. (previously presented) The microwave semiconductor device according to claim 6, wherein said MMIC is a GaAs MMIC.

32. (previously presented) The microwave semiconductor device according to claim 6, further comprising a solder attachment along a periphery of said MMIC, to seal said MMIC to said substrate.

33. (previously presented) The microwave semiconductor device according to claim 6, further comprising a conformal coating disposed on said sealant.

34. (previously presented) The microwave semiconductor device according to claim 6, further comprising a cover disposed on said MMIC.